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LOGISTICAL EVALUATION OF T53-L-7 ENGINE IN AN OV-1C AIRPLANE.(U)
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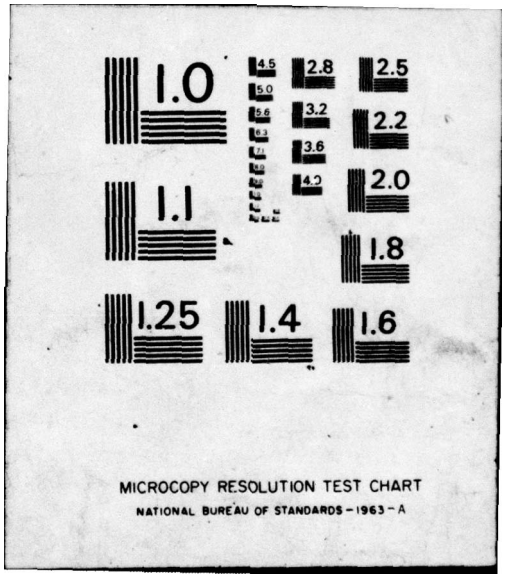
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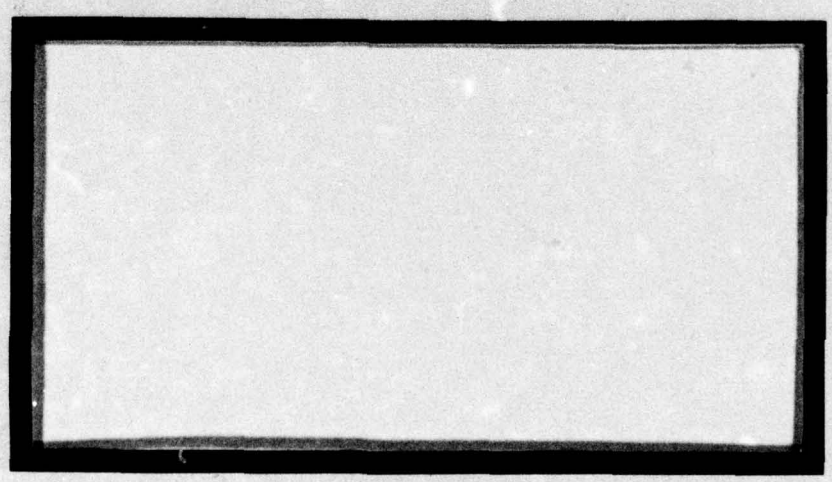
US ARMY TEST & EVALUATION COMMAND



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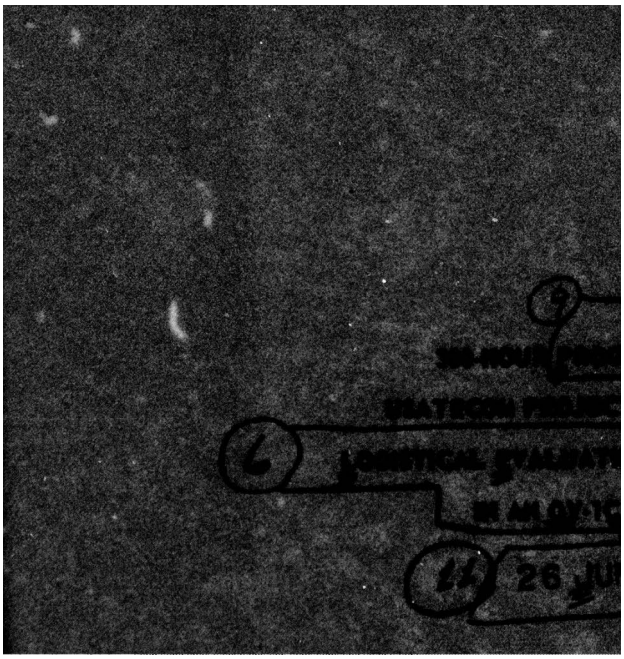
FORT RUCKER, ALABAMA



UNITED STATES ARMY AVIATION TEST BOARD
Fort Rucker, Alabama

STEBG-DCT 26 JUN 1973

SUBJECT: 300-Hour Progress Report, USATECOM Project No. 4-3-1110-06-2, "Logistical Evaluation of T53-L-7 Engine in an OV-1C Airplane"

TO: Commanding General
U. S. Army Aviation and Surface Materiel Command
ATTN: SMOSM-E
P. O. Box 209, Main Office
St. Louis 66, Missouri

1. This letter transmits 300-hour progress report on subject evaluation.

2. Test Results:

a. This report reflects logistical support requirements for T53-L-7 engines in terms of maintainability, reliability, and supportability.

b. A schedule of 12 hours per day, five days per week, for a total of 1200 flying hours has been established. This report covers results of the first 300 hours of a 1200-hour test program.

3. Conclusions and recommendations are being withheld until the end-of-test report.

A. J. RANKIN
Colonel, Armor
President

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CG, USATECOM

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UNITED STATES ARMY AVIATION TEST BOARD
Fort Rucker, Alabama

300-HOUR PROGRESS REPORT

USATECOM PROJECT NO. 4-3-1110-06-R

LOGISTICAL EVALUATION OF T53-L-7 ENGINE IN AN OV-1C AIRPLANE

PART I - GENERAL

A. Authority.

1. Directive. Message TT20448, CG, USATECOM, Aberdeen Proving Ground, Maryland, 28 December 1962, subject: "Logistical Evaluation of T53-L-7 Engines."

2. Purpose. The purpose of this evaluation is to determine the logistical support requirements of the T53-L-7 engines in terms of maintainability, supportability, and reliability. In addition to these requirements a program has been established to increase the time between overhaul (TBO) of the T53-L-7 engines and components peculiar thereto.

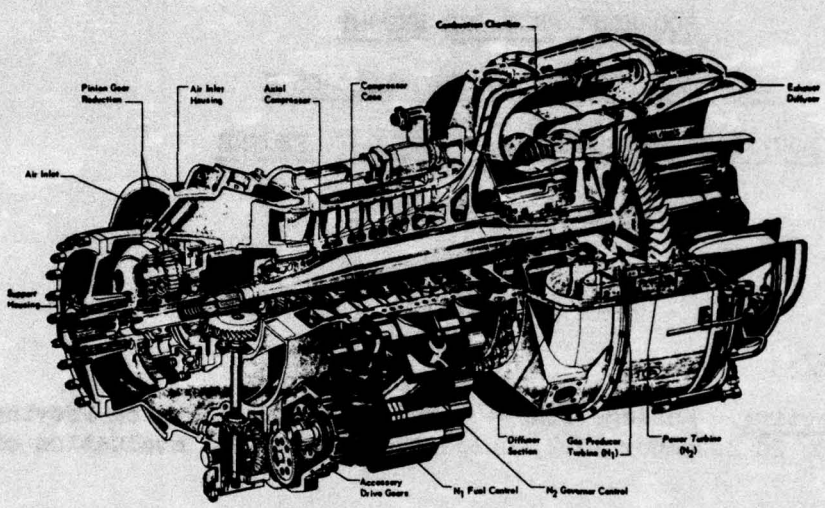
3. Reports.

a. This test is for the Mobility Command as prescribed by United States Army Test and Evaluation Command (USATECOM) Regulations 705-1. This report is submitted and distributed in accordance with USATECOM Regulations 705-2, paragraph 4a.

b. This report is the first in a series of progress reports to be submitted on the evaluation of the T53-L-7 engines, and covers the results of the first 299 hours of this test program. This evaluation began 4 February 1963 with 21:05 hours already accumulated on the engine and covers 277:55 hours of actual flight test time.

c. Progress reports are programmed for 600-hour, 900-hour, and 1200-hour intervals, with a final end-of-test report which will present findings and recommendations compiled as a result of analysis of data gathered during 1200 hours of accelerated flying.

B. Description of Materiel.



The T53 engine is a shaft turbine aircraft powerplant with a single-stage, free-type power turbine. Incorporated are a combination axial-centrifugal compressor driven by a single stage turbine and an external, annular vaporizing combustor. Provisions for interstage and aircraft (customer) air bleed are a part of the engine. The basic engine consists of an inlet housing assembly, an overspeed governor and tachometer drive support and gear assembly, an accessory drive carrier assembly, a compressor rotor assembly, a diffuser housing assembly, a first-stage turbine assembly, a combustor turbine assembly and an output reduction carrier and gear assembly. The T53-L-7 is similar to the T53-L-3 engine except that the turbine inlet temperature and fuel flow have been slightly increased to raise the rated horsepower from 960 to 1100. Other product improvement features have been incorporated such as helical propeller gear reduction assembly, redesigned fuel vaporizer tubes, scoopless combustor liner, etc.

C. Test Objectives.

1. The objectives of the evaluation, broadly stated, are to determine to what degree the -7 configuration engine will affect the logistical support requirements of the OV-1 airplane and to determine the capability of engine components peculiar to the -7 configuration to accept extended or increased TBO's. Of secondary importance is the objective for gathering, compiling, and reporting logistical data generated as a result of attaining 1200 hours on all systems of the airplane

for the purpose of providing verification of such data generated as a result of previous evaluations on the OV-1 airplane.

2. Specific objectives were to determine:

a. The validity of established service tours of major components peculiar to the -7 configuration and to furnish information data to substantiate increased service tours as warranted.

b. To determine the effect of the -7 configuration on the availability rate of the OV-1 airplane.

c. The average consumption rate of fuel, oils, and lubricants.

d. The suitability of current Military Specifications of fuels and lubricants for -7 configuration.

e. The maintenance man-hours required to support the OV-1 airplane and the effects, if any, on such requirements by the -7 configuration.

f. Parts required to support the airplane.

g. The areas requiring equipment improvement recommendations.

h. The adequacy of current maintenance publications including maintenance allocation chart and inspection systems for support of the -7 configuration.

i. The need for and adequacy of special tools and ground handling and servicing equipment.

j. Any adverse effects on the ease of maintenance which may be effected as a result of the -7 configuration.

k. Those problem areas created by design or mechanical deficiencies.

D. Conclusions and Recommendations. Conclusions and recommendations are being withheld until the end-of-test report.

A. J. RANKIN
Colonel, Armor
President

PART II - TEST DATA

A. Scope.

1. Flight Program. A schedule of 12 hours per day, five days per week, for a total of 1200 flying hours has been established. The flight program is based primarily on simulated field-type operations in line with the designed mission of the airplane. Flight profiles are being utilized to control the flying program. These profiles impose the loads that could be expected in various types of tactical operations and eliminate the possibility of single-profile steady-state operations.

2. Maintenance Program. Maintenance, first through fourth echelon with the exception of third and fourth echelon on electronics and signal type support, is accomplished by civilian contract, employing personnel possessing skill levels which are considered to be comparable to those found in military field units. While the maintenance procedures, publications, and systems used are basically the same as those utilized by field units in performing maintenance, certain terminology and data used are unique to the evaluation and require clarification before comparative use is possible. These terms are:

a. Productive Man-Hours. In determining and establishing maintenance manpower staffing requirements, a number of factors always prevail which must be weighed in arriving at a realistic figure in terms of number of personnel. Due to the fact that a majority of these factors are variables which are affected by such by such things as location, climate, environment, duty details and leave policies, availability of tools and equipment, etc., the maintenance man-hours recorded during test were restricted to the actual time required to complete a given maintenance function, i. e., replacement of blade, removal of an engine, etc. The intent of such a system is that the man-hours data thus produced will provide a realistic "nucleus" which is influenced by a mimimum of such variables.

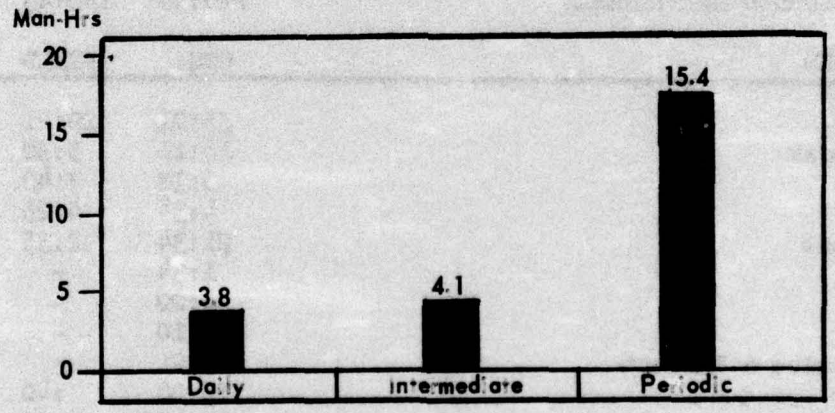
b. Aircraft Availability. The term aircraft availability as used in this report differs from that as normally used by aviation units in the field. For the purpose of this evaluation and in order to provide a yardstick with which to measure the maintenance reliability of the airplane, the system used considers only those scheduled flight periods which are delayed or interrupted by a maintenance failure or discrepancy. Those periods which are established for scheduled maintenance are not considered in arriving at the availability for test purposes; therefore, the percentage of availability as used herein represents that portion of the scheduled flight periods which are free of maintenance interruptions or delays.

3. Supply Support Program. All supply and spare parts common to the airframe and T53 engines are obtained through normal supply channels. Parts peculiar to the -7 configuration are obtained directly from the manufacturer under terms of the contract.

4. Engine Data. Engine data are applicable to 299 hours of operation; however, only 277:55 hours have been accumulated during actual flight test.

B. Details of Tests.

1. Maintenance Man-hours. A total of 649:02 maintenance man-hours was expended to perform scheduled inspections and to correct all the discrepancies attributed to normal wear and tear of the airplane. This resulted in a flight to maintenance ratio of 1 to 2.3. The following chart reflects the average man-hours required to perform the daily, intermediate, and periodic inspections.



a. The L-7 engines remained relatively maintenance-free during this stage of testing. Most of the maintenance performed was for the scheduled inspection and repair of the #1 engine, which required 107:10 man-hours and the partial teardown inspection of the #2 engine, which required 31:48 man-hours. The only other major function performed was the replacement of the fuel control and topping governor on the #1 engine for which 15:16 man-hours were expended. Other maintenance performed on test engines included vibration checks, fuel servo "O" ring replacements, inspections of fuel servo filter (scheduled), rigging adjustments, routine operational checks for minor malfunctions, and minor repairs, such as repositioning lines and wiring and resecuring bolts and screws.

b. In addition, 73:30 maintenance man-hours were performed which were not included in the foregoing analysis since they were not dictated by the airplane itself. These man-hours include maintenance required for TWX and MWO compliance, test modifications, initial installations of test items, mechanic errors, and all maintenance performed on special test items (photo panel installation and airspeed monitor).

c. A complete analysis of man-hour requirements by echelon and airplane system is shown in the following chart.

SCHEDULED	ORG.	FIELD	TOTAL
Daily	113:06	-	113:06
Intermediate	40:55	-	40:55
Periodic	30:57	-	30:57
Other	43:57	33:33	77:30
Time Change Replacements	-	-	-
Engine Inspections	-	107:10	107:10
TOTAL SCHEDULED MAINTENANCE	228:55	140:43	369:38
UNSCHEDULED	**ORG.**	**FIELD**	**TOTAL**
Airframe	35:01	29:21	64:22
Landing Gear	16:11	5:30	21:41
Hydraulic	5:32	7:40	13:12
Utility	4:34	4:25	8:59
Power Plant	21:34	42:35	64:09
Fuel	1:34	-	1:34
Oil	4:20	-	4:20
Ignition	0:10	-	0:10
Air Induction & Exhaust	0:21	-	0:21
Propeller	19:06	:40	19:46
Electrical	17:17	1:00	18:17
Instruments	39:23	23:10	62:33
TOTAL UNSCHEDULED MAINTENANCE	165:03	114:21	279:24
TOTAL MAINTENANCE MAN-HOURS	393:58	255:04	649:02

2. Equipment Improvement Recommendations. Fifteen Equipment Improvement Recommendations were submitted during this test phase. Only one, 63-139, pertained to the L-7 engines. This EIR resulted from defective Fuel Control Assembly, which was returned to the manufacturer under closed circuit overhaul contract. A listing of the EIR's submitted will be found on the following page.

Control Nr	Nomenclature	Description
63-74	Gun Assy, Drogue	Burr or lip found around firing pin hole (attributed to inadequate deburring technique at time of manufacture).
63-138	Valve Assy, Slide Selector	Leakage at return fitting, causing brakes to stick in open position.
63-139	Control Assy, Fuel	#1 engine torquemeter was sticking at 82 PSI (suspected malfunctioning of P3 trigger valve).
63-158	Cable Assy, Secondary Firing	Copilot ejection seat cable jammed between main firing gun housing and seat casting, causing seat to bind.
63-177	Valve, Speed Control	Packing in valve damaged and windshield wiper could not be turned off.
63-178	Indicator, Electrical Tachometer	Erratic operation (cause unknown).
63-179	Control Valve, Temperature	Cockpit heater inoperative due to shorted actuator in temperature control valve.
63-180	Indicator, Electrical Tachometer	Excessive fluctuation (cause unknown).
63-181	Skin Assy, L/H Engine Nacelle	Skin cracked (attributed to metal fatigue resulting from excessive temperatures in this area).
63-182	Fairing Assy, R/H	Loose rivets at aft top hinge point.
63-183	Fairing Assy, L/H	Rivets loose at top aft hinge point.
63-184	Indicator, Turn & Slip	Indicator inoperative, no needle deflection (cause unknown).
63-185	Thermocouple, Exhaust	Open lead within thermocouple harness, rendering exhaust gas temperature indicator inoperative.
63-186	Indicator, Turn & Slip	Indicator inaccurate and not suitable for IFR flight (cause unknown).
63-187	Seal, Hatch Assy	Hatch assy seal, P/N 134B10400-29, loose.

3. Supply and Spare Parts. During this phase of the test, a total of 27 line items, consisting of 96 total parts, required replacement. No major component replacements were required during this reporting period. The parts which were replaced at the 300-hour inspection of the left engine (S/N LE-02030X) are reflected in the listing below in Power Plant System and are marked with a double asterisk (**). For a complete analysis of this inspection, refer to Engineering Analysis. A listing of parts used in maintaining the airplane is reflected in this section.

Federal Stock Nr	Nomenclature	Qty
	AIRFRAME SYSTEM	
3110-278-7148	Bearing, Ball, Airframe	1
	LANDING GEAR SYSTEM	
1630-859-6060	Lining, Brake, Dual Disc	48
1630-897-6129	Disc, Brake	2
2620-772-6468	Tire and Wheel Assembly	3
2620-A0-1-QC15	Tire and Wheel Assembly	2
	HYDRAULIC SYSTEM	
1650-776-1958	Valve Assembly	1
	UTILITY SYSTEM	
1375-792-5398	Cable Assembly	1
1660-785-8195	Controller, Temperature	1
6625-473-8070	Timer, Sequential	1
	POWER PLANT SYSTEM	
1-170-240-01*	Fuel Control	1
1-170-250-01*	Overspeed Governor	1
2840-766-8645**	Lockring, Comp. Shaft, Rear Bearing	1
2840-766-8653**	Packing, Preformed, Front Bearing Support	1
2840-778-2267**	Packing, Preformed	2
2840-778-2274**	Lockwire, Second Turbine Cylinder	12
2840-778-2276**	Nut, Power Shaft, Engine	3
2840-855-9480**	Rotor, Wedged, First Stage	1
2840-862-4858**	Seal, Second Turbine Cylinder	1

*Manufacturer's Part Number

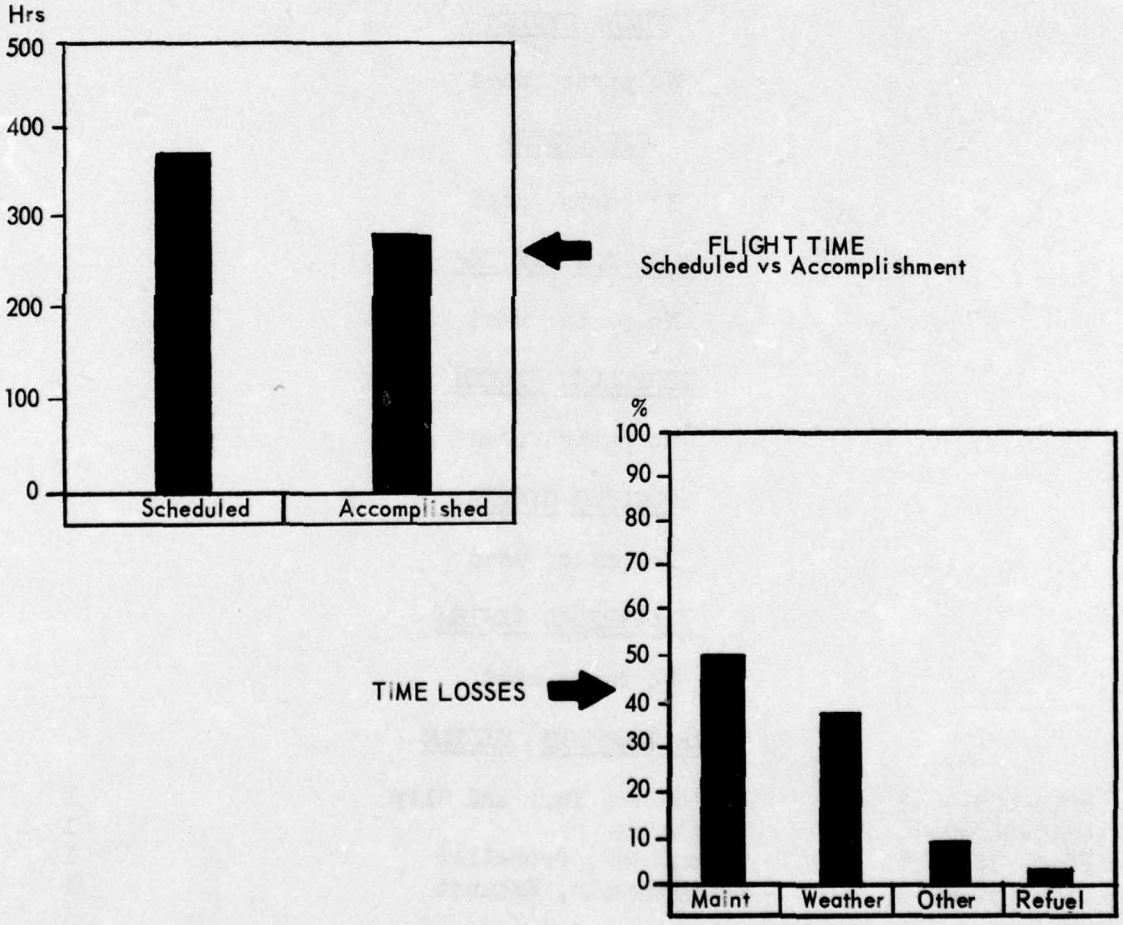
Federal Stock Nr	Nomenclature	Qty
	POWER PLANT SYSTEM (Contd)	
2915-977-1044**	Vaporizer Assembly	1
5330-263-8030**	Packing, Preformed	3
5330-542-1420**	Packing, Preformed	1
5330-640-9941	Packing, Preformed	2
STD3001B21* **	Stud	2
	FUEL SYSTEM	
	No parts used	
	OIL SYSTEM	
	No parts used	
	IGNITION SYSTEM	
	No parts used	
	PROPELLER SYSTEM	
	No parts used	
	COOLING SYSTEM	
	No parts used	
	ELECTRICAL SYSTEM	
	No parts used	
	INSTRUMENTS SYSTEM	
6610-620-3802	Indicator, Turn and Slip	1
6610-842-9434	Indicator	1
6620-778-2324	Tachometer, Propeller	1
6685-658-6549	Thermocouple, Exhaust	1

*Manufacturer's Part Number

4. Aircraft Availability. Aircraft availability was computed by the following method: Test Time Versus Test Time Lost.

a. The average aircraft availability rate during the accomplishment of 277:55 flight hours was 75%. This resulted in a time loss of 25%. Of the total time lost, 50% was due to maintenance delays, 37% due to weather delays, 10% due to other (other includes delays which were no fault of the airplane), and 3% due to refueling delays.

b. The following charts reflect scheduled flight time versus flight time accomplished and a percentage breakdown of total time lost.



5. POL Consumption. During the accomplishment of 277:55 flight hours, a total of 37,629 gallons of fuel was used. This resulted in an average of 135.39 gallons per flight hour. No substitute fuels were used; therefore, the entire usage total was JP-4. A total of eight pints of MIL-L-7808 oil was used in the engines, i.e., five pints in the left hand engine, and three pints in the right hand engine. The average oil consumption rate was 0.02 pint per flight hour for the left hand engine and 0.01 pint per flight hour for the right hand engine. In addition, 27 quarts of MIL-L-7808 oil were used in the performance of engine maintenance, i.e., oil changes, flushing of engines, and other maintenance performed in the oil system. The following chart reflects total operational consumption and average consumption rates per flight hour of each item used.

Nomenclature	Required Item	Unit	Quantity Used	Rate (Per Flight Hr)
Fuel, engine	MIL-L-5624 (JP-4)	Gals	37,629.00	135.39
Oil, hydraulic, petroleum base	MIL-H-5606	Qts	68.00	0.24
Oil, lubricating	MIL-L-7808	Qts	27.00	0.10
Oil, engine	MIL-L-7808	Pts	8.00	0.03
Grease, high temp water resistant	MIL-G-25760	Lbs	1.00	0.0036
Grease, low and high temp	MIL-G-3278	Lbs	3.5	0.013
Oil, general purpose, low temp	MIL-L-7870	Qts	0.25	0.0010

6. Suitability of Fuel and Lubricants. All fuel and lubricants used during this phase of the test were found to be satisfactory in terms of suitability of the item and effect on operating conditions. The chart below reflects the type of POL used during test and the effect on components.

Type of POL	Purpose	Suitability
MIL-H-5606	Oil, hydraulic, petroleum base	Satisfactory
MIL-L-7808	Oil, lubricating	Satisfactory
MIL-G-25760	Grease, high temp water resistant	Satisfactory
MIL-G-3278	Grease, low and high temp	Satisfactory
MIL-L-7870	Oil, general purpose, low temp	Satisfactory
MIL-L-5624 (JP-4)	Fuel, engine	Satisfactory

7. Maintenance Publications. The TM 55-1510-204 series manuals, as revised with those changes recommended in the OV-1 Logistical Evaluation and the OV-1 Product Improvement Evaluation, have been adequate for maintaining the test airplane. As no maintenance manuals for the T53-L-7 configuration were available, the instructions contained in the TM 55-2840-201 series relative to the T53-L-3 engine were used for maintaining the -7 engine and were found to be generally satisfactory during this reporting period of the test. The limited engine maintenance functions performed during these first 299 hours, however, preclude a complete evaluation of the publications. Ensuing reports will present findings relative to engine maintenance publications.

8. Maintenance Allocation Chart. The maintenance allocation chart contained in the TM 55-1510-204-20, as purified by the OV-1 Logistical Evaluation and the OV-1 Product Improvement Program, has provided effective support for maintaining the test airplane during the reporting period.

9. Inspection Simplification. Inspection requirements as contained in TM 55-1510-204 series manuals were used and found to be satisfactory.

10. Special Tools and Equipment.

a. The special tools required for support of the -3 engine have been adequate for support of the -7 engines. Total requirement for the first 299 hours was 33 special tools, of which 18 were required for maintenance of the airplane and 15 for maintenance of the engines. Usage of special tools is listed below.

Nomenclature	Part Number	Usage
Adapter	134GT1040	1
Pins, Rigging	42X1070	1
Fixture, Holding, Gas Producer Wheel	LTC-T508	1
Socket, Cone Removal	LTC-T502	1
Bar, Locating	LTC-T153	1
Plate, Locking	LTC-T248	1
Socket, Wrench, Face Spanner	LTC-T506	1
Wrench, Socket	LTC-T245	1
Sling	105GT1024-3	2
Wrench, Canopy	134GT1039	2
Driver	HS8258	1
Sling, Engine	134GT1004	2
Tester	7CAC-806-555	1
Tester, CEC	Unknown	1
Stand, Weight Check	MBEU10380	1
Test Unit	134GT1041T1	1

Nomenclature	Part Number	Usage
Kit, Seat, Martin Baker	134GT1048	1
Adapter, Vibration Pickup Top Rear	LTC-T302	1
Adapter, Vibration Pickup	LTC-T312	1
Cradle	105GT1040	1
Indicator, Tension	SWE54	1
Adapter, Ratchet	SWE67	1
Wrench, Power	SWE8100	1
Attachment, Puller	HS8237	1
Puller, Mechanical, Control Assy	HS8236	1
Wrench	HST719	1
Puller, Mechanical, Transfer Housing	HS7817	1
Handle	SWE63	1
Wrench, Spanner	HS7741	1
Wrench, Ratchet, Sleeve Spanner	HS8055	1
Wrench, Nosewheel	SD5508	1

b. In addition to the special tools listed in the preceding table, the following are considered necessary for support of the -7 engines and OV-1C propeller.

(1) To facilitate removal of the front and rear propeller lip seal the tool shown in Figure 1 was fabricated. With this item the above seal may be replaced at 4th echelon.

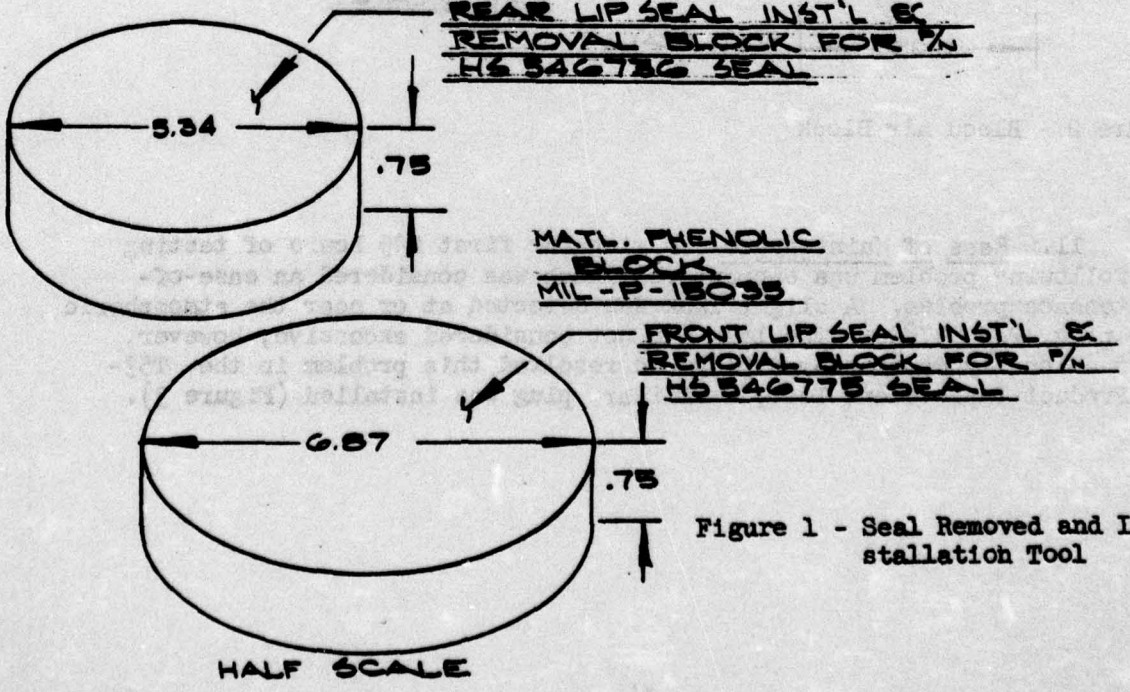


Figure 1 - Seal Removed and Installation Tool

(2) To block off the anti-icing and customer air bleed line at the diffuser the tool shown in Figure 2 was fabricated. This item is necessary for engine cleaning and is inserted between the line and diffuser to block bleed air.

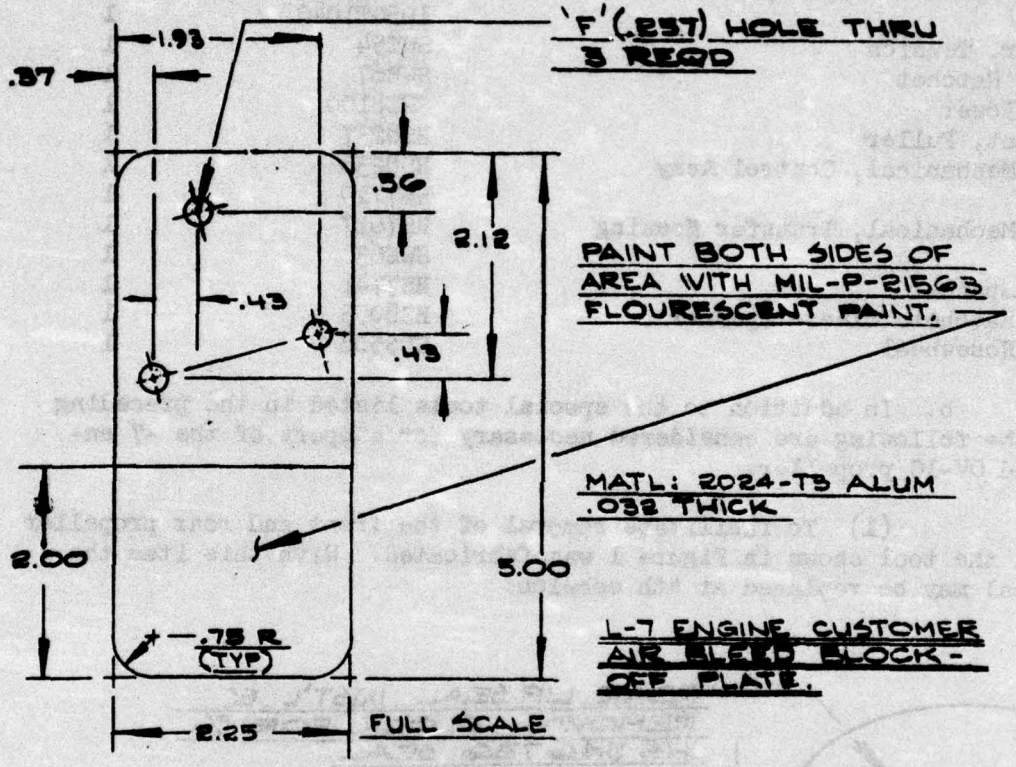


Figure 2 - Bleed Air Block

11. Ease of Maintenance. During the first 299 hours of testing the following problem was encountered which was considered an ease-of-maintenance problem. A slight leak was detected at or near the atmospheric sump plug, P/N 547890. The leak was not considered excessive; however, since a locally manufactured plug had resolved this problem in the T53-L-3 Product Improvement Test, a similar plug was installed (Figure 3).

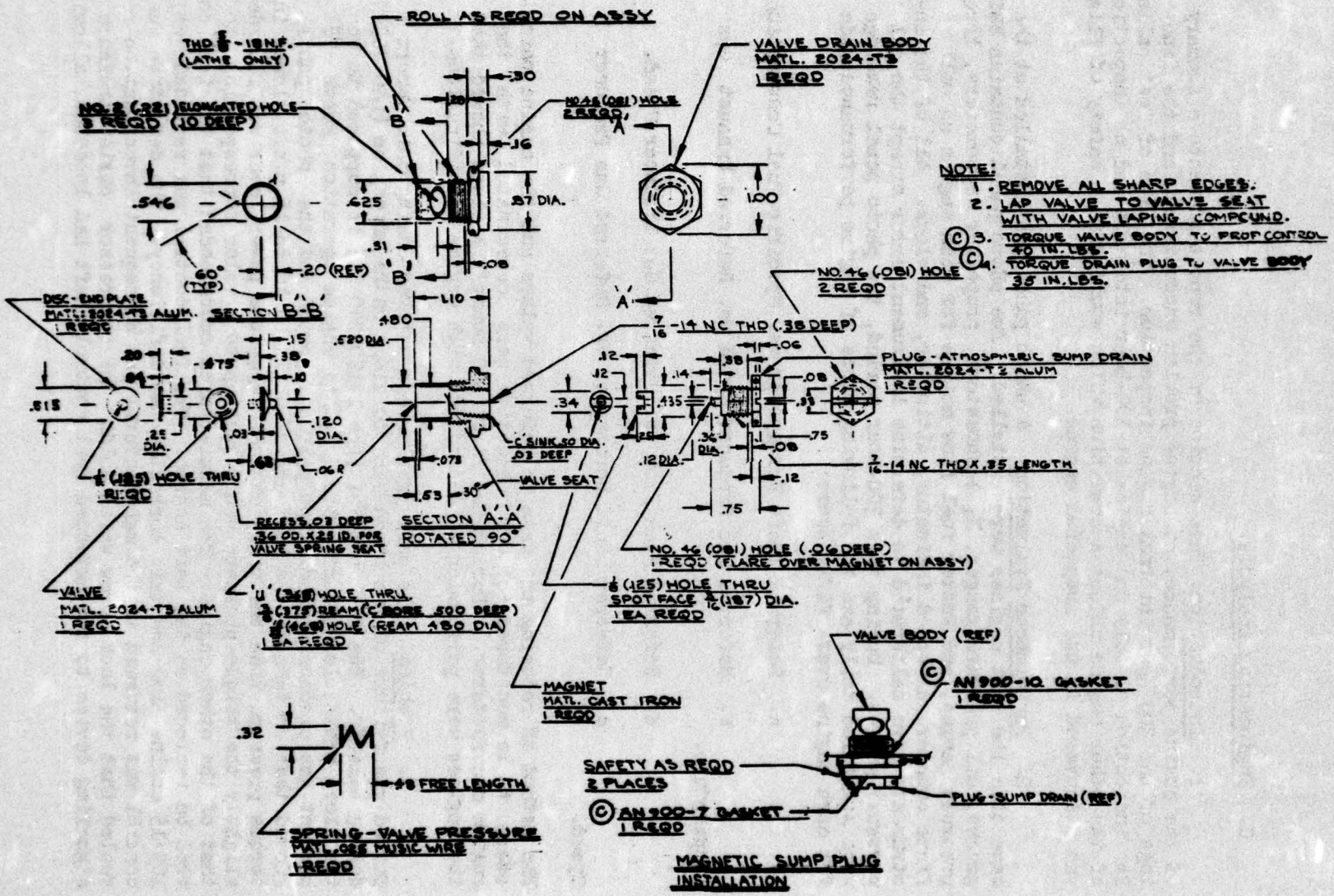

ROLL AS REQD ON ASSY
THD 5/8 - 18 N.F. (LATHE ONLY)
VALVE DRAIN BODY MATL. 2024-T3 1 REQD
NO. 8 (.321) ELONGATED HOLE 3 REQD (.10 DEEP)
NO. 46 (.081) HOLE 2 REQD
NOTE:
1. REMOVE ALL SHARP EDGES.
2. LAP VALVE TO VALVE SEAT WITH VALVE LAPING COMPOUND.
3. TORQUE VALVE BODY TO PROP CONTROL 40 IN. LBS.
4. TORQUE DRAIN PLUG TO VALVE BODY 35 IN. LBS.
NO. 46 (.081) HOLE 2 REQD
DISC - END PLATE MATL: 2024-T3 ALUM. 1 REQD
SECTION B-B
7/16 - 14 NC THD (.38 DEEP)
PLUG - ATMOSPHERIC SUMP DRAIN MATL. 2024-T3 ALUM 1 REQD
1/4 (.25) HOLE THRU 1 REQD
RECESS .03 DEEP .36 OD. X .25 ID. FOR VALVE SPRING SEAT
C'SINK .50 DIA. .03 DEEP
VALVE SEAT
SECTION A-A ROTATED 90°
7/16 - 14 NC THD X .35 LENGTH
NO. 46 (.081) HOLE (.06 DEEP) 1 REQD (FLARE OVER MAGNET ON ASSY)
VALVE MATL. 2024-T3 ALUM 1 REQD
'U' (.368) HOLE THRU
3/8 (.375) REAM (C'BORE .500 DEEP)
#46 (.081) HOLE (REAM .180 DIA) 1 EA REQD
1/8 (.125) HOLE THRU SPOT FACE 7/16 (.187) DIA. 1 EA REQD
VALVE BODY (REF)
AN 900-10 GASKET 1 REQD
MAGNET MATL. CAST IRON 1 REQD
SAFETY AS REQD 2 PLACES
AN 900-7 GASKET 1 REQD
PLUG - SUMP DRAIN (REF)
.48 FREE LENGTH
SPRING - VALVE PRESSURE MATL. .086 MUSIC WIRE 1 REQD
MAGNETIC SUMP PLUG INSTALLATION

Figure 3

C.. Engineering Analysis.

1. Introduction. This section of the report presents a summary of the engine performance, an engine problem encountered, and the findings of the 300-hour internal engine inspection. The Plan of Test called for inspection of only one engine at 300-hour intervals and no inspection of the other engine unless a condition which would affect safety of flight was discovered in the inspected engine.

2. Performance Evaluation. A photo panel was installed at the same time the test engines were installed. The photo panel contains EGT gauges, oil pressure gauges, N_1 tachometers, propeller tachometers, torque pressure gauges, and Potter fuel flow meters for each engine as well as frame counter, airspeed indicator, altimeter, and clock. All of the instruments were calibrated to determine instrument error except the oil pressure gauges. During this 300-hour period, the photo panel readings were monitored daily and the following plots of engine performance made for each engine every fifty hours:

a. Referred Shaft Horsepower vs. Specific Fuel Consumption.

b. Referred Gas Producer Speed vs. Referred Exhaust Gas Temperature.

c. Referred Fuel Flow vs. Referred Gas Producer Speed.

d. Referred Shaft Horsepower vs. Referred Gas Producer Speed.

The method of reducing the data to referred values and the engine parameters to be monitored for our objective were coordinated with the engine manufacturer. During the first 300 hours the plots showed that the engines were performing in accordance with engine specifications.

3. Problem. The only problem encountered during this report period was failure of the bleed band to close on the left engine (LEO-2030X) during takeoff. The fuel control (P/N 1-170-240-01) is supposed to keep the bleed bands closed during steady-state engine operation above 78 percent gas producer speed. The pilots reported and the photo panel showed that on takeoff the left engine would be 10 to 15 p.s.i. lower in torque pressure than the right engine. When the power lever was retarded slightly the torque pressure would jump up to a value corresponding to that of the other engine. The manufacturer recommended that the fuel control be replaced on the left engine. The fuel control was replaced at 165:15 engine time and this corrected the deficiency. The defective fuel control was returned to the manufacturer and subsequent investigation revealed that the lock screw which holds the compressor outlet pressure signaling device to the extended fuel control shaft had loosened, allowing

the shaft to rotate without transmitting the compressor outlet pressure closing signal to the bleed band actuator. The bleed band actuator, not receiving the closing signal, allowed bleed off of compressor discharge pressure, resulting in low power output.

4. Inspection Findings.

a. The left engine was selected for inspection because no difficulties had been encountered with the right engine. Both hot and cold sections of this engine were inspected. The findings of this inspection are shown in the following table.

T53-L-7 300-Hour Inspection (Engine LE0-2030X)

Item	Part Number	Deficiency	Disposition
Reduction Gear Assy	1-020-200-1	None	Reinstalled (not disassembled)
Power Turbine Nozzle and Cylinder Assy	1-140-270-10	None	Reinstalled (not disassembled)
Combustion Chamber Liner Assy	1-130-140-01	Piece of one mounting bracket broken off	Reinstalled
1st Turbine Rotor	1-100-428-02	Ten (10) blades damaged	Replaced
1st Stage Turbine Nozzle	1-110-030-28	Three (3) radial cracks, 1/8 square inch missing from trailing edge of one blade	Reinstalled
Fuel Vaporizer Assy	1-130-370-01	#2 Assembly was burned	Replaced

b. Due to the damage found in the left engine, it was decided to inspect the 1st turbine rotor of the right engine (LE0-2026X). The 1st turbine rotor appeared to be in good condition and only one minor crack was observed in the power turbine nozzle and cylinder assembly. The engine was reassembled without further inspection.